UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/701,184	11/27/2000	Johannes Bozenhardt	3286-0111P	7725

30596 7590 01/02/2004

HARNESS, DICKEY & PIERCE, P.L.C.
P.O.BOX 8910
RESTON, VA 20195

EXAMINER	
PERILLA, JASON M	
ART UNIT	**PAPER NUMBER**
2634	7

DATE MAILED: 01/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)	
	09/701,184	BOZENHARDT, JOHANNES	
	Examiner	Art Unit	
	Jason M Perilla	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 27 November 2000.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-8 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-8 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 27 November 2000 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 .

4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other:

DETAILED ACTION

1. Claims 1-8 are pending in the instant application.

Priority

2. Foreign priority for document 198.23.705.1 DE under Title 35 U.S.C. § 119 is requested, but a copy of the certified copy has not been submitted as required.

Information Disclosure Statement

3. The information disclosure statement filed November 27, 2000 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Corcoles (5663987 – Referenced in IDS Paper No. 4.) in view of Desurvire et al (5801862).

Regarding claim 1, Corcoles discloses a method for restoring a binary signal (col. 1, lines 40-51) from a distorted binary signal that is communicated in a disturbed environment. Although Corcoles implies that the method applies to electrical binary

signals present on conductive transmission lines, one skilled in the art understands that the method can be applied to a binary signal used in optical communications. The method disclosed by Corcoles comprises: determining time intervals (fig. 5b, refs, 7-12), each including at least twice the distortion time (col. 3, lines 24-27 - 8 samples being twice the distortion time of 4 -), detecting an occurrence of level changes of the distorted binary signal in the time intervals (col. 3, lines 19-21, lines 35-40), determining level holding times of the distorted binary signal indicating an amount of time that a level remains unchanged within a time interval (col. 3, lines 19-24), restoring the binary signal in the time intervals by transferring a level of the distorted binary signal in the time intervals in which no level changes have occurred in the distorted binary signal, and by transferring a level of the distorted binary signal in the time intervals in which level changes have occurred only when the respective level holding times reach a predeterminable value (col. 3, lines 35-55). Corcoles does not disclose explicitly using the method in an optical transmission link exhibiting a distortion time or determining a clock rate of the binary signal including an integral multiple of one time interval for synchronization of the recovered signal. However, Desurvire et al teaches properties of an optical communications system for binary signals that exhibits distortion. Desurvire et al teaches that an optical communications system exhibits Gordon-Haus jitter which gives rise to uncertainty concerning the arrival times of signals (col. 1, lines 27-28). One skilled in the art acknowledges that the distortion time exhibited due to Gordon-Haus jitter is notoriously known in the art. Further, Desurvire et al teaches a method to overcome this jitter by determining the clock rate of the binary signal to synchronize the

regeneration of the binary signals (col. 3, lines 19-22; lines 10-18). In view of the determination of the clock rate of a binary signal as taught by Desurvire et al as applied to the correction of distortion time in a binary communication signal, it would have been obvious to apply this teaching to the method of Corcoles for the correction of distortion time being exhibited in an conductive transmission system or an optical transmission system. Therefore, it would have been obvious to one of ordinary skill in the art at the time which the invention was made to determine the clock rate of the binary signal as taught by Desurvire et al because it could be used to re-synchronize the restoration of the binary signal, and hence correct the distortion time or phase shift of the transmitted binary signal because it is an advantage to correct the distortion time or phase shifting when regenerating or repeating a signal to ensure that the distortion times do not propagate unduly. Further, it is obvious to one of ordinary skill in the art that the method of Corcoles could be applied to any binary transmission system exhibiting distortions including an optical transmission system as suggested by Desurvire et al.

Regarding claim 2, Corcoles in view of Desurvire et al disclose the limitations of claim 1 as applied above. Further, Desurvire et al discloses that a type of distortion, which can be determined in an identification mode of operation, is taken into consideration for weighting the level holding times for restoring the binary signal in the time intervals in which level changes have occurred. Desurvire et al teaches that binary signals having different wavelengths will have different distortion times (col. 6, lines 1-12). Because the type of distortion or amount of phase shift can be determined in an identification mode of operation the various distortion times or phase shifts can be

accommodated during the regeneration of the binary signal(s). Desurvire et al discloses that, as a result, all of the relative phase shifting between channels can be re-synchronized (col. 6, lines 19-22). While Desurvire et al discloses that the different channels are having different wavelengths, this leads to the application of the determination of the phase shifting or distortion type as a function of wavelength for the use of the method of Corcoles in view of Desurvire et al in an optical communications system. However, one skilled in the art further understands the teachings of Desurvire et al regarding the determination of the phase shifting or distortion type as a function of wavelength in an optical communications system to be analogous to that of frequency in an electrical or conductive communications system. Hence, the teaching is applicable to both optical communication and conductive communication systems, and the distortion recovery method of Corcoles in view of Desurvire et al as viewed by one of ordinary skill in the art has been determined to be applicable to both types of systems.

Regarding claim 3, Corcoles in view of Desurvire et al disclose the limitations of claim 1 as applied above. Further, Desurvire et al discloses that the clock rate has been determined to apply appropriate phase shifting to provide synchronous regeneration of a binary signal (col. 3, lines 23-26). Hence, the teaching is applied so that after each level change, the subsequent time intervals are synchronized. The purpose of the acquisition of the clock rate of the binary signals is for the sole purpose of synchronization of the regenerated binary data signal.

Regarding claim 4, Corcoles discloses a circuit arrangement for restoring a binary signal from a distorted binary signal, comprising: means for determining time

intervals (fig. 5b, refs, 7-12) each including at least twice the distortion time (col. 3, lines 24-27 - 8 samples being twice the distortion time of 4 -), means for detecting an occurrence of level changes of the distorted binary signal in the time intervals (col. 3, lines 19-21, lines 35-40), means for determining level holding times of the distorted binary signal indicating an amount of time that a level remains unchanged within a time interval (col. 3, lines 19-24), means for restoring the binary signal in the time intervals by transferring a level of the distorted binary signal in the time intervals in which no level changes have occurred in the distorted binary signal, and by transferring a level of the distorted binary signal in the time intervals in which level changes have occurred, only when the respective level holding times reach a predeterminable value (col. 3, lines 35-55). Corcoles does not disclose explicitly using the arrangement in an optical transmission link exhibiting a distortion time or means for determining a clock rate of the binary signal including an integral multiple of one time interval for synchronization of the recovered signal. However, Desurvire et al teaches properties of an optical communications system for binary signals that exhibits distortion. Desurvire et al teaches that an optical communications system exhibits Gordon-Haus jitter which gives rise to uncertainty concerning the arrival times of signals (col. 1, lines 27-28). One skilled in the art acknowledges that the distortion time exhibited due to Gordon-Haus jitter is notoriously known in the art. Further, Desurvire et al teaches means to overcome this jitter by determining the clock rate of the binary signal to synchronize the regeneration of the binary signals (col. 3, lines 19-22; lines 10-18). In view of the determination of the clock rate of a binary signal as taught by Desurvire et al as applied

to the correction of distortion time in a binary communication signal, it would have been obvious to apply this teaching to the method of Corcoles for the correction of distortion time being exhibited in an conductive transmission system or an optical transmission system. Therefore, it would have been obvious to one of ordinary skill in the art at the time which the invention was made to determine the clock rate of the binary signal as taught by Desurvire et al because it could be used to re-synchronize the restoration of the binary signal, and hence correct the distortion time or phase shift of the transmitted binary signal because it is an advantage to correct the distortion time or phase shifting when regenerating or repeating a signal to ensure that the distortion times do not propagate unduly. Further, it is obvious to one of ordinary skill in the art that the circuit arrangement of Corcoles could be applied to any binary transmission system exhibiting distortions including an optical transmission system as suggested by Desurvire et al.

Regarding claim 5, Corcoles in view of Desurvire et al disclose the limitations of claim 4 as applied above. Further, Desurvire et al discloses that a type of distortion, which can be determined in an identification mode of operation, is taken into consideration by a means for weighting the level holding times for restoring the binary signal in the time intervals in which level changes have occurred. Desurvire et al teaches that binary signals having different wavelengths will have different distortion times (col. 6, lines 1-12). Because the type of distortion or amount of phase shift can be determined in an identification mode of operation the various distortion times or phase shifts can be accommodated during the regeneration of the binary signal(s). Desurvire et al discloses that, as a result, all of the relative phase shifting between channels can

be re-synchronized (col. 6, lines 19-22). While Desurvire et al discloses that the different channels are having different wavelengths, this leads to the application of the determination of the phase shifting or distortion type as a function of wavelength for the use of the method of Corcoles in view of Desurvire et al in an optical communications system. However, one skilled in the art further understands the teachings of Desurvire et al regarding the determination of the phase shifting or distortion type as a function of wavelength in an optical communications system to be analogous to that of frequency in an electrical or conductive communications system. Hence, the teaching is applicable to both optical communication and conductive communication systems, and the distortion recovery method of Corcoles in view of Desurvire et al as viewed by one of ordinary skill in the art has been determined to be applicable to both types of systems.

Regarding claim 6, Corcoles in view of Desurvire et al disclose the limitations of claim 4 as applied above. Further, Desurvire et al discloses that the clock rate has been determined to apply appropriate phase shifting to provide synchronous regeneration of a binary signal (col. 3, lines 23-26). Hence, the teaching is applied so that after each level change, a means is provided so that subsequent time intervals are synchronized. The purpose of the acquisition of the clock rate of the binary signals is for the sole purpose of synchronization of the regenerated binary data signal.

Regarding claim 7, Corcoles in view of Desurvire et al disclose the limitations of claim 2 as applied above. Further, Desurvire et al discloses that the clock rate has been determined to apply appropriate phase shifting to provide synchronous regeneration of a binary signal (col. 3, lines 23-26). Hence, the teaching is applied so

that after each level change, the subsequent time intervals are synchronized. The purpose of the acquisition of the clock rate of the binary signals is for the sole purpose of synchronization of the regenerated binary data signal.

Regarding claim 8, Corcoles in view of Desurvire et al disclose the limitations of claim 4 as applied above. Further, Desurvire et al discloses that the clock rate has been determined to apply appropriate phase shifting to provide synchronous regeneration of a binary signal (col. 3, lines 23-26). Hence, the teaching is applied so that after each level change, a means is provided so that subsequent time intervals are synchronized. The purpose of the acquisition of the clock rate of the binary signals is for the sole purpose of synchronization of the regenerated binary data signal.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following prior art references not relied upon above are cited to further show the state of the art with respect to time synchronizing repeaters.

U.S. Pat. No. 5838475 to Takeyari et al; Optical regeneration system.

U.S. Pat. No. 5594583 to Devaux; Recovery of light pulses.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M Perilla whose telephone number is (703) 305-0374. The examiner can normally be reached on M-F 8-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Chin can be reached on (703) 305-4714. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.

Jason M Perilla
December 4, 2003

jmp

STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600